

## REMARKS

Claims 1-10 and 15-16 are pending herein.

I. The anticipation rejections based on Maria Rijn Van (WO 02/18058) using US 2003/018507 for reference.

The USPTO respectfully rejects claim 1 under 35 U.S.C. §102(a) as being anticipated by Maria Rijn Van, using U.S. Publication No. 2003/018507 for reference.

A. Van does not disclose a jetting voltage applying section positioned on a back end surface of a nozzle plate and having an ink passage hole, as claimed in claim 1.

Claim 1 claims in relevant part:

“liquid jetting head comprising a nozzle to jet the droplet from an edge portion, an inside diameter of the edge portion of the nozzle being more than 0.2  $\mu\text{m}$  and being not more than 4  $\mu\text{m}$ , the nozzle being integrally formed with a nozzle plate;

...

a jetting voltage applying section to apply a jetting voltage to the liquid solution in the nozzle, the jetting voltage applying section comprising a jetting electrode provided as a layer on a back end surface of the nozzle plate, the jetting electrode having an ink passage hole positioned at a border between the liquid solution supplying section and the inside passage.” (emphasis added)

No new matter is introduced by these amendments. Support for the amendments can be found on pages 35-38 of the present specification. Regarding these limitations, it is respectfully not seen where Van discloses the claimed structure quoted above.

Specifically, the USPTO respectfully alleges on page 2 of the Office Action that paragraph [0078], lines 1-5 of Van (US 2003/018507) discloses a jetting voltage applying section. However, it is respectfully noted that Van only teaches that droplets can be charged with an external voltage during droplet formation. **It is respectfully important to note that Van does not disclose anything about the structure that allegedly charges the droplets; Van merely teaches that the droplets can be charged.** Thus, it is respectfully asserted that

Van does not teach or suggest the specifically claimed structure of a jetting voltage applying section provided on a back end surface of the nozzle plate and having an ink passage hole, as claimed in claim 1.

In contrast, present Figure 11 illustrates one possible embodiment of the claimed structure quoted above. Specifically, present Figure 11 shows **a jetting electrode 28 provided on a back end surface of nozzle plate 26c.** Additionally, present Figure 11 shows **passage 22 formed in part through jetting electrode 28;** therefore, the portion where passage 22 passes through jetting electrode 28 is one example of an ink passage hole, as claimed in claim 1. Thus, it is respectfully asserted that jetting electrode 28 is one example of a jetting voltage applying section provided on a back end surface of the nozzle plate and having an ink passage hole, as claimed in claim 1.

Thus, it is respectfully asserted that Van does not disclose all the claimed limitations of claim 1. Therefore, it is respectfully asserted that Van does not anticipate claim 1.

## II. The obviousness rejections based on Hotomi (US 5,477,249) in view of Maria Rijn Van (WO 02/18058).

The USPTO respectfully rejects claims 1-3, 6 and 8 under 35 U.S.C. §103(a) as being unpatentable over Hotomi in view of Maria Rijn Van. Claim 1 is an independent claim.

It is respectfully noted that on page 3 of the Office Action, the USPTO states that claims 1-3, 6, and 8 are rejected under 35 U.S.C. § 102(a). It is respectfully believed that the USPTO intended to reject the claims under 35 U.S.C. § 103(a), and the remarks below are made based on this assumption.

### A. The cited references do not teach or suggest a jetting voltage applying section positioned on a back end surface of a nozzle plate and having an ink passage hole, as claimed in claim 1.

Claim 1 claims in relevant part:

“liquid jetting head comprising a nozzle to jet the droplet from an edge portion, an inside diameter of the edge portion of the nozzle being more than 0.2  $\mu\text{m}$  and being not more than 4  $\mu\text{m}$ , the nozzle being integrally formed with a nozzle plate;

...

a jetting voltage applying section to apply a jetting voltage to the liquid solution in the nozzle, the jetting voltage applying section comprising a jetting electrode provided as a layer on a back end surface of the nozzle plate, the jetting electrode having an ink passage hole positioned at a border between the liquid solution supplying section and the inside passage." (emphasis added)

No new matter is introduced by these amendments. Support for the amendments can be found on pages 35-38 of the present specification. Regarding these limitations, it is respectfully not seen where the cited references teach or suggest the claimed structure quoted above.

Specifically, the USPTO respectfully alleges on page 4 of the Office Action that Hotomi teaches a jetting voltage applying section at elements 9 and 17 of Figure 1 of Hotomi.

However, it is respectfully important to note that counter electrode 17 of Hotomi is formed separate from any nozzle plate structure, and grounding electrode 9 of Hotomi is formed on a piezo plate 2 in ink room 5, not on a back end surface of a nozzle plate as claimed in claim 1. Additionally, it is respectfully important to note that neither counter electrode 17 nor grounding electrode 9 of Hotomi has an ink passage hole, as claimed in claim 1. Thus, it is respectfully asserted that Hotomi does not teach or suggest a jetting voltage applying section provided on a back end surface of a nozzle plate and having an ink passage hole, as claimed in claim 1.

Furthermore, as noted above, Van also does not teach or suggest a jetting voltage applying section provided on a back end surface of a nozzle plate and having an ink passage hole. Therefore, Van does not overcome the deficiencies in Hotomi as described above.

In contrast, present Figure 11 illustrates one possible embodiment of the claimed structure quoted above. Specifically, present Figure 11 shows a jetting electrode 28 provided on a back end surface of nozzle plate 26c. Additionally, present Figure 11 shows passage 22 formed in part through jetting electrode 28; therefore, the portion where passage 22 passes through jetting electrode 28 is one example of an ink passage hole, as claimed in claim 1. Thus, it is respectfully asserted that jetting electrode 28 is one example of a jetting voltage applying section provided on a back end surface of the nozzle plate and having an ink passage hole, as claimed in claim 1.

The claimed structure quoted above is important and non-trivial because it provides significant **inherent** advantages over conventional structures. For example, since the jetting voltage applying section of claim 1 is directly provided on the backside of the nozzle plate to which the nozzle is provided integrally, **the electrode can be positioned as close to the edge portion of the nozzle as possible.**

Consequently, the specifically claimed structure of claim 1 **prevents delay of voltage application by the jetting voltage applying section.** As a result, it is possible to improve the response of the liquid jetting apparatus, and thus to more rapidly operate the apparatus.

Thus, it is respectfully asserted that the cited references, taken either alone or in combination, do not teach or suggest all the claimed limitations of claim 1. Therefore, it is respectfully asserted that claim 1 is not obvious over the cited references.

#### **B. The dependent claims.**

As noted above, it is respectfully asserted that independent claim 1 is allowable, and therefore it is further respectfully asserted that dependent claims 2-3, 6, and 8 are also allowable.

#### **III. The obviousness rejections based on Hotomi (US 5,477,249) in view of Takahashi (US 6,412,925).**

The USPTO respectfully rejects claims 1-3, 6 and 8 under 35 U.S.C. §103(a) as being unpatentable over Hotomi in view of Takahashi. Claim 1 is an independent claim.

#### **A. The cited references do not teach or suggest a jetting voltage applying section positioned on a back end surface of a nozzle plate and having an ink passage hole, as claimed in claim 1.**

Claim 1 claims in relevant part:

“liquid jetting head comprising a nozzle to jet the droplet from an edge portion, an inside diameter of the edge portion of the nozzle being more than 0.2  $\mu\text{m}$  and being not more than 4  $\mu\text{m}$ , **the nozzle being integrally formed with a nozzle plate;**

...

a jetting voltage applying section to apply a jetting voltage to the liquid solution in the nozzle, the jetting voltage applying section comprising a jetting electrode provided as a layer on a back end surface of the nozzle plate, the jetting electrode having an ink passage hole positioned at a border between the liquid solution supplying section and the inside passage.” (emphasis added)

No new matter is introduced by these amendments. Support for the amendments can be found on pages 35-38 of the present specification. Regarding these limitations, it is respectfully not seen where the cited references teach or suggest the claimed structure quoted above.

Specifically, as noted above, it is respectfully asserted that Hotomi does not teach or suggest the specifically claimed jetting voltage applying section of claim 1. Additionally, Takahashi respectfully does not overcome these deficiencies in the primary reference Hotomi because Takahashi does not teach or suggest a jetting voltage applying section provided on a back end surface of a nozzle plate and having an ink passage hole, as claimed in claim 1.

Thus, it is respectfully asserted that the cited references, taken either alone or in combination, do not teach or suggest all the claimed limitations of claim 1. Therefore it is respectfully asserted that claim 1 is allowable.

#### B. The dependent claims.

As noted above, it is respectfully asserted that independent claim 1 is allowable, and therefore it is further respectfully asserted that dependent claims 2-3, 6, and 8 are also allowable.

#### IV. The obviousness rejections based on Hotomi (US 5,477,249) in view of Maria Rijn Van (WO 02/18058) further in view of Yamada et al. (US 6,420,476).

The USPTO respectfully rejects claims 9-10 under 35 U.S.C. § 103(a) as being obvious over Hotomi in view of Van, further in view of Yamada. As noted above, it is respectfully asserted that independent claim 1 is allowable, and therefore it is further respectfully asserted that dependent claims 9-10 are also allowable.

V. The obviousness rejections based on Hotomi (US 5,477,249) in view of Takahashi (6,412,925) further in view of Yamada et al. (US 6,420,476).

The USPTO respectfully rejects claims 9-10 under 35 U.S.C. § 103(a) as being obvious over Hotomi in view of Takahashi, further in view of Yamada. As noted above, it is respectfully asserted that independent claim 1 is allowable, and therefore it is further respectfully asserted that dependent claims 9-10 are also allowable.

VI. The provisional double patenting rejection.

The USPTO respectfully provisionally rejects claim 1 on the ground of nonstatutory obviousness-type double patenting over claims 1-8, 12, and 13 of copending Application No. 10/529,004.

Applicants respectfully note that claim 1 has been amended. Therefore, it is respectfully believed that the double patenting rejection no longer applies.

Additionally, since neither the present claims nor the claims of co-pending Application Serial No. 10/529,004 have been patented, it is respectfully not possible that double patenting can be determined (nothing is patented and there is no way to compare the final claims until one of the cases has been patented and the other claims are otherwise allowable). Thus, the Applicants respectfully request that the USPTO withdraw the provisional obviousness double patenting rejections until the claims are in final form and otherwise in condition for allowance, and also until the cases over which double patenting is alleged are allowed.

VII. The new claims.

Applicants respectfully note that claims 15 and 16 have been added. No new matter is introduced by these amendments. Support for the amendments can be found on pages 35-37 of the present specification.

VIII. Conclusion.

Reconsideration and allowance of all of the claims is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Please contact the undersigned for any reason. Applicants seek to cooperate with the Examiner including via telephone if convenient for the Examiner.

Respectfully submitted,

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